TIPERS BRIDGE
(Great Wicomico River Bridge)
Spanning the Great Wicomico River at
Virginia State Route 200 at Glebe Point
Kilmarnock Vicinity
Northumberland County
Virginia

HAER No. VA-58

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
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Philadelphia, PA 19106

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HISTORIC AMERICAN ENGINEERING RECORD

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Location:	Spanning the Great Wicomico River on Virginia State Route 200 at Glebe Point Kilmarnock Vicinity Northumberland County Virginia USGS Reedville Quadrangle, Universal Transverse Mercator Coordinates: 18 . 378360 . 4189550
Fabricator:	Virginia Bridge and Iron Company of Roanoke, Virginia
Date of Construction:	July through December 1934
Present Owner:	Virginia Department of Transportation 1401 East Broad Street Richmond, Virginia 23219
Present Use:	Vehicular Bridge
Significance:	Built in six months during the depth of the Depression, the Tipers Bridge is a well preserved example of a once standard bridge type that was commonly used to economically span a large number of major river crossings in the Virginia Tidewater. It is located at a crossing that has a long history of some economic importance in Northumberland and Lancaster Counties. This is the second oldest of ten remaining swing-spans dating from between 1930 and 1957 currently listed in the Virginia Department of Transportation bridge inventory.
Project Information:	This documentation was undertaken in May 1991 under contract with the Virginia Department of Transportation as a mitigative measure prior to the removal and disposal of the bridge.

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Northumberland County

Northumberland County was formed in 1648 and encompassed the lands of the Wiccocomoco and Chickacoan Indians, the whole Northern Neck, and all lands known or rumored to the west. The number of settlers in Northumberland grew fairly quickly and new counties were created from within its borders: Lancaster in 1652, Westmoreland in 1653, and Richmond in 1692. The majority of Northumberland's settlers were Royalist Englishmen fleeing Cromwellian rule who lived on large, self-sufficient tobacco plantations situated along the shores of the Potomac and Rappahannock Rivers and their tributaries.

Because of the topography of the Northern Neck, the counties were almost totally dependent on the water for travelling and shipping. Steamers out of Baltimore had begun plying the waters of the Chesapeake in 1813, and Baltimore served as Northumberland's primary port and link to a larger, regional economy for much of the county's history (Brown 1940: 10).

Although the agriculture of the Northern Neck had become somewhat diversified by the mid-nineteenth century, intensive tobacco farming eventually wore out the available soil, and by the outbreak of the War Between the States, the area was showing signs of economic decline. With the exception of sporadic Federal raiding of waterside plantations for provisions, military activity had no direct effect on the county. However, the economic chaos brought on by the war and the loss of men and labor to the war effort, economically devastated Northumberland County. After the war, in 1872, the counties of the Northern Neck formed a Board of Immigration in an attempt to attract new settlers from the North, Northwest, Canada, and Europe. The county advertised cheap farm land, cheap labor (former slaves), fishing opportunities, and "comfortable, hospitable conditions" (Board of Immigration 1872: 9-12). They intended to carve up the large plantations into small farms and establish industrial centers throughout the area.

One of the first industries introduced to the area came in 1867 when Elijah Reed of Sedgewick, Maine brought the menhaden fishing industry to Northumberland County. Menhaden, an oily, unappetizing fish, considered in the Northern Neck as best used for fertilizer, had replaced dwindling numbers of whale as a source of oil in the North after 1850 (Haynie 1959: 9). Reed set up a kettle factory on the shore between the Little and Great Wicomico Rivers and for rendering the fish into oil. Remains of the fish were sold as fertilizer. In the 1870s and 1880s, seven fish and shell fish rendering and packing factories were built in Northumberland, and by the turn of the century, Reedville was the largest fish port in the United States and one of the largest in the world (Booth 1989: personal communication).

Agriculture enjoyed some success after the war. Land was cultivated in corn, wheat, tomatoes, and timber; and many mills and canneries were built to process the harvest (Delano 1976: 330). Locally harvested or produced goods were steamed to Baltimore. Steamboats with names such as Maggie, Anne Arundel, Enoch Pratt, Tangier, Eastern

Shore, Old Point Comfort, Liberty, and Piankatank steamed up and down the Bay and its tributaries carrying produce, goods, and passengers between Baltimore and Norfolk (Wilson 1984: 67). Timb's wharf and Reedville on Cockrell's Creek; and Sampsons, Blackwells, and Tipers wharves on the Great Wicomico were Tuesday and Friday stopping points for the steamers (Booth 1989: personal communication).

Glebe Point

The Great Wicomico River was named after Wicocomoco, head of one of two petty chiefdoms from which Northumberland County was originally formed. The name Glebe Point is a shortened version of Fairfields Glebe, which was originally a 306.5 acre tract of land owned by the Anglican Church. After the Revolution, when all Church lands became the property of the State of Virginia, the tract was sold by the Commonwealth to help finance the establishment of the Northumberland Academy. In 1820 the Fairfields Glebe tract was purchased by Reverend Benedict B. Burgess. Burgess, a Methodist Episcopal circuit rider from Anne Arundel County, Maryland, had been assigned to the area in 1809 and shortly thereafter married Lucy Coles, the daughter of a local store owner (Jett 1983: 3). Several years later Burgess bought his father-in-law's store (Northumberland County Deed Book 19: 236). The store was located at the intersection of present day Routes 200 and 360, north of the Great Wicomico Bridge. In 1829, when a post office was established in Reverend Burgess store and he was made post master, the area became known as Burgess Store (Jett 1983: 3 and Taylor 1825: 22). The tract remained in the hands of the Burgess family until the 1880s when it began to be divided up among family members and sold off (Jett 1983: 4).

The original patentee for the land on the south bank of the Great Wicomico River, opposite Glebe Point, was Thomas Salisbury (Nugent 1983: 235). In the middle of the eighteenth century, Hopkins Harding, having left the family home at Cherry Point, purchased 800 acres of Salisbury's patent (Waring 1971: 103). In 1759, Harding rented a portion of land to John Tipper for life (Northumberland County Deed Book 5: 62). From that time on the creek and shoreline opposite Fairfields has been known as either Tippers or Tipers--pronounced, and sometimes spelled, "Typers" (Jett 1983: 3).

Ferry Across the Great Wicomico River

References to a ferry near the point on Fairfields Glebe are found back to 1701 when one of the property boundaries given in the sale of a tract of land in the immediate area was described as "to the poynt known by the name of Ferry Poynt" (Northumberland County Deed Book 1706-20: 95). In 1785, when a parcel of property near George Coles Store was sold, one of it's boundary locations was referenced to the "ferry road" (Northumberland County Deed Book 13: 149-50). And, again, two years later, around November, 28, 1787, the Reverend Francis S. Ashbury mentions in his journal that he had "crossed Wicomico," then held a quarterly conference at Lancaster Meeting House the following day (Jett 1983: 2). Finally, in 1812, when the Reverend Burgess bought George Coles' store, the deed describes one boundary as being "the main road to Taylor's Ferry"

(Northumberland County Deed Book 19: 236).

The beginnings of the first public ferry on Glebe Point can be dated to October 22, 1890, when the Northumberland Board of Supervisors, empowered by an act of the General Assembly passed the previous fourth of March, contracted for the building of a ferry boat forty feet long, twelve feet wide, and two feet deep. The aprons for getting on and off the boat were to be attached to the boat by iron hinges. The following year, the board chose a site for the ferry landing on a stretch of shore known as Jack's Bar near the Blackwell's wharf area in a cove north of Glebe or Ferry Point. This was probably the site of a number of the earlier ferries, since it was referred to as "Ferry Farm" or "Ferry Tract" in the deeds. Glebe Point juts southward into the Great Wicomico River some 1,300 feet and is c. 600 feet wide at its widest point (Mouer, et al 1989: 3). The peninsula is flat and rises only a few feet above sea level. The county purchased right-of-way for the road, built a ferryman's house and a boat, and bought chain and a chain wheel to pull the ferry (Hudnall 1984: 54-7).

The original ferry landing on the south side of the river was below a prominent clay bank less than a mile downriver from the present bridge (Presnall 1979: 3279). The shoreline is characterized by overgrown steep bluffs. Between the shoreline and the bluffs is a gently sloped tidal terrace approximately 125 feet wide. The crossing was three-quarters-of-a-mile wide and reportedly subject to strong tidal currents (Presnall 1979: 3275).

Most of the land on Glebe Point at the time was heavily wooded with a narrow road running through it from Blackwell's wharf to Burgess Store (Booth 1989: personal communication). An account entitled "A Trip to the Northern Neck in the 1890s" (Simmons 1979: 3212-3243) noted the area's poor roads. Villages and hamlets were generally small and largely self sufficient, although increasingly visited by "drummers" out of Baltimore. A typical settlement would have a general store, blacksmith's shop, possibly a church, probably a bar room, and a saw mill. Although some of these collections of buildings would grow into relatively substantial towns, others--like Burgess Store--would decline and maybe even disappear altogether.

During the first year of the public ferry, a variety of people were hired to run it for short periods of time. Later, it became the practice to advertise for bids and contract for a ferryman to run the ferry from 1 to 5 years. The first contracted ferryman, Oliver Christian received $100 per annum. He was required to live at the ferry and be subject to calls from daybreak to eight o'clock at night. It was considered an important responsibility and a bond was generally required, usually 25% of a year's salary, as security for the faithful performance of assigned duties (Hudnall 1984: 60).

The ferryman was entitled to supplement his salary by charging fares. Who was charged--and how much--changed over the years with changes in the economy, population, and resulting volume of traffic. In 1892, residents of the county rode free during daylight hours and were required to pay the same fares as nonresidents if they rode between sundown and sunrise or on Sunday (Cockrell 1983: 89). Doctors, county road supervisors

and the team of workers that traveled with them rode free during all hours (Hudnall 1985: 4).

Originally, the county was responsible for approving and absorbing all costs associated with maintaining the ferry. However, as time went by, those interested in becoming ferryman had to agree to absorb an increasing amount of the cost of running the ferry from the fares they received. Eventually, even county resident were charged a toll and by 1921, the ferryman was absorbing all of the cost of routine maintenance--including building the boats--and paying the county a quarterly fee for the privilege of operating the ferry. (Ibid: 4). The last man ferryman paid the county $102 dollars a quarter in 1928 (Northumberland County Supervisors Book 8: 38-9).

The ferry boat was pulled back and forth between Blackwell's wharf on the north shore and the clay bank on the south shore until May 1902, when the ferry landings were moved upriver (Presnall 1979: 3275). The ferry landing on the south side was moved to Tipers wharf, where the present bridge abutment is now located (Cockrell 1983: 88; Booth 1989: personal communication). The landing on the north side was moved from Blackwell's to the end of Glebe Point, just east of the present bridge abutment where a shanty and wharf are now located (Ibid). This north landing became county right-of-way after being purchased by the county from Odis Cockrell (two-thirds share) and Millard Burgess (one-third share) in the summer of 1907 (Hudnall 1985: 3).

The landings on either side of the river were reached by crossing over private property, the right-of-way having been purchased from the owners (Davenport on the north side, Hayden on the south). Travellers were required to go through whatever gates the owners had set up on their property (Presnall 1979: 3275). Traffic on the local roads increased as more of the salesman pitched to a growing number local crossroad stores. At the turn-of-the-century, a second store with a hotel "above," named J. I. Brent and Company, opened across the road from Burgess's store (Jett 1989: personal communication).

In 1904, a man named Odis Cockrell was made ferryman. Mr. Cockrell is the man most locals have traditionally associated with the Great Wicomico ferry. Some natives of the area believe the ferry began and ended with Cockrell (Booth 1989: personal communication). Cockrell was a native of the area and highly enterprising carpenter and jack-of-all-trades. During his tenure as ferryman he not only ran the ferry, but built ferryboats, skiffs, and scows for the county and others; hauled scow loads of lumber to "Freight Sail Vessels" or fish factories at night; bought and sold property near his own house on the heavily wooded point; and started a canning business during World War I (Cockrell 1983: 87-89).

In his short autobiography, Odis Cockrell wrote that, "it wasn't any thing to see from three to ten vessels loading and waiting to be loaded with lumber railroad ties cord trap poles pulp wood gum logs can goods" (Ibid: 89). Sailing ships and steamboats of all sizes would dock at Blackwell's or Tipers wharves and load fish, oysters, cattle, sheep, farm produce, lumber, and canned goods for eastern markets.

In 1906, a man named J. A. Neubert opened an oyster shucking and packing house on Glebe Point and soon "everybody with more than 5 acres of oyster shore started shucking oysters" (Ibid: 90). It is likely that they were able to make money at shucking small amounts of oysters only because the oyster population suffered a serious decline in the 1890s and oysters, which had been one of the leading products in the county, were at a premium.

In 1910, to ease the workload associated with the ferry, particularly the toil involved in pulling the ferry across by hand with cable and sheaves, Cockrell bought an outboard motor which he placed in one of his skiffs and began "shoving" the ferry across the river (Ibid: 88). Cockrell eventually hired a man to work the ferry for him while he pursued his other interests.

One of Cockrell's other interests eventually broke him shortly after Armistice Day. Cockrell, following Neubert's entrepreneurial lead, had invested heavily in starting a canning business. He was counting on the United States government to buy all the pears and tomatoes he could pack for the the boys "over there." When the Great War ended and the army was no longer buying rations, Cockrell had to sell his canned goods for "less than the cans cost me so I went broke" (Ibid: 88-9). His debt was unusually large due to the high prices most goods went for during the war--especially sugar--and he lost everything: home, land, business, and boats. In 1918, he moved "up the road" to Burgess Store (Booth 1989: personal communication).

Meanwhile, the problems connected with the ongoing operation of the ferry were a frequent subject at the County Board of Supervisors meetings (Northumberland County Supervisors Book 8). Chain, chain wheels, cable, tackle and oars frequently needed to be repaired or replaced (in 1903, the county started using cable instead of chains, and had fewer problems). Ferry boats and skiffs needed to be maintained--or replaced--and the ferry shut down for days to a month at a time. In 1905, one year after buying a new ferryboat and skiff, both were lost in a severe storm and had to be replaced. Ferrymen that could be trusted to do their job had to be advertised for and salaries and contracts agreed upon. A ferryman slack in his duties could cause inconvenience for many. Several times a ferryman had to be reprimanded because he was not opening at sunrise, or answering the bells promptly--or at all, which meant travelers and school children had to go the long way around. Sometimes the ferrymen were negligent about keeping up the approaches or landings and people became reluctant to take advantage of the ferry because they were afraid their horses might become injured.

In 1920, a plan was proposed by the Northern Neck Railway and Power Company for a rail route that would run from Fredericksburg to Rainswood, where it would fork and continue on to Reedville to the north and Irvington to the south. This plan fell through for fear that shipping rates on the railroad would have been higher than the existing steamers (Wilson 1984: 151)

Tipers Bridge

Just a few years later, in a speech given in Richmond at the Good Roads Convention of 1925, Harry Flood Byrd could have been speaking directly to the problems of the Northern Neck when he said, "Virginia is a social, industrial and political unit. Her so called divisions are merely geographical expressions. Roads are . . . the foundation stones upon which the prosperity of a people must largely depend. The final and complete unification of Virginia in common purpose and common effort will be written in terms of transportation" (Byrd 1925: 2). Byrd's road plan envisioned two highway systems: "a state system linking together the several sections of the state and, second; a county system of farm-to-market roads which would provide for the economical transportation for the farmers' produce to market or shipping points" (Ibid: 8).

In 1927, true to Byrd's vision, the economic relationship between Northumberland County and Baltimore was changed significantly with the opening of the Downing Bridge over the Rappahannock River between Tappahannock and Warsaw. The new swing-span, part of Byrd's state highway system linking together sections of the state, made the Northern Neck much more accessible to Richmond and significantly shifted not only the Northern Neck's economic ties, but its whole perception of life and work. The waters were no longer looked on as "the watermen's highways" but barriers to economic progress (Wilson 1984: 149). The Northern Necks population continued to decline as people left the countryside to search for employment in Baltimore, Washington, and Richmond.

In 1928, the General Assembly directed the State Highway Commission to incorporate a large chunk of county roads into its system. The Northumberland County Board of Supervisors hoped to get the main road between Burgess Store to Kilmarnock via Tipers, Wicomico Church and Reboth Church (west of present day Route 200), along with the ferry, included. (Northumberland County Supervisors Book 8: 64). Later that year, at the November board meeting, the Virginia State Highway Commission notified the board that the roadway and ferry would be adopted into the state highway system and requested the board to inform the ferryman, Warner T. Harding, that his lease giving him "the privilege of operating the Great Wicomico Ferry between Glebe Point and Typers" was to be terminated as of December 1, 1928 (Ibid: 116).

Three years after the Great Wicomico Ferry had been taken into the State Highway System, during the deepening depression, the Northumberland Board of Supervisors "Resolved" at their December, 1931 board meeting that: "because of the unemployment situation in the county due to the general depression and especially to the partial failure of oyster business and the Menhaden fishing industry; and the fact that the state road between Tipers Ferry and Kilmarnock has become impassable, thereby depriving a large number of citizens of their only outlet and causing great inconvenience to the traveling public in general," the state ought to build a bridge (Ibid: 333).

The men believed the replacing the ferry with a bridge and a hard-surfaced highway would "very materially help the unemployment situation in this County and furnish an

outlet to a large number of people who are practically cut off." It was the "sense of this Board that the State Highway Commission as soon as possible borrow of the Reconstruction Finance Corporation sufficient money for the completion" of the above mentioned public works (Ibid: 333). The chairman of the board and the county's commonwealth attorney were appointed to "call on the proper authorities and use all honorable means to secure [said] construction" (Ibid: 333).

The Menhaden fishing industry had kept the economy relatively stable into the early 1930s, at which time the catch declined significantly. Northumberland County at this point was thrown back on itself and forced to become, again, largely self sufficient. The Downing Bridge at Tappahannock gave residents an easy route to and from the Northern Neck and many decided to leave. Those that stayed could still farm, fish, or lumber (Delano 1976: 330).

On July 24, 1933 the Northumberland Board of County Supervisors received formal notice informing them that the Department of Highways had allocated $115,790.00 for the construction of a bridge at Tiper's Ferry. The money was to come out of Federal funds provided under the National Industrial Recovery Act of 1933, Sec. 204. (Hudnall, 1984: 4) In 1933-34, Northumberland received $173,036.94 for highway improvements from the Highway Commissioner. This represented one-third of the money allocated to the Fredericksburg Construction District that year (Highway Commissioner 1936: 6).

That same summer a convict road force began work on the road between Tipers Ferry and Kilmarnock (Rappahannock Record 1934: 1). In 1908, the question of whether or not convicts should be put to work on the roads had been argued--or advertised--in the press by writers who thought it in the Commonwealth's best interest to put the lawless to work and to secure good roads. Articles argued against giving petty criminals free room and board in "John Law's Hotels," and pushed for putting the convicts to work on improving the Commonwealth's roads, assuring the reader the convict actually preferred life out of doors,

> Oh, take me back to the convict camp,
> Put me to work on the grade:
> I like the scent of the canvas tent
> And the bunk the sergeant made.
> Just take me out of this pesky jail
> To the camp and God's fresh air (Johnson 1908: 2).

The trucking done over the roads and bridges that linked together Virginia's counties had a serious economic impact on the steamboat businesses; causing all of them to curtail service and some, like the Maryland and Virginia Steamboat Company, to go bankrupt (Wilson 1984: 167). Blackwell's and Tiper's wharves on the north and south shores of the Great Wicomico were still operating on a limited schedule when in the late summer of 1933, a severe storm pounded the area. A week after the storm Tiper's was still not operating and Blackwell's was put up for sale (Ibid).

That fall, on November 2, concerns over strong currents at the site of the proposed bridge were voiced at a public hearing held at Heathsville, Northumberland's county seat (Northern Neck News 1-12-1934: 6). The army district engineer investigated and found no strong currents at the point and on December 22, 1933 the War Department approved plans for the bridge between Tipers Ferry and Glebe Point.

The following February 9, 1934, the project was one of twelve advertised by the Office of the Department of Highways, with sealed bids to be submitted by 10 a.m., Tuesday, February 27 (Northern Neck News 3-9-1934: 4). It was listed as Route 200: Project 759, and was estimated to require: 2,099 cubic yards of concrete, 1,478,800 pounds of steel, 35,000 pounds of machinery, and 26,705 linear feet of piles. Plans called for the draw to be a standard triangular with verticals through truss center bearing swing span 240 feet long with two 100 foot channels and a vertical clearance of 10 feet at mean low water. It was noted that the work,

> will be done under the special provisions, rules , regulations, and specifications of the National Industrial Recovery Act, Section 204. Minimum wage--skilled labor--40 cents per hour, unskilled labor--30 cents per hour. The attention of the bidders is directed to the Special Provisions covering subletting or assigning the contract and all domestic materials. Copies of the ACT may be obtained at the Richmond Office and will be strictly enforced" (Ibid).

On March 9, the Northern Neck News reported that the low bidder for the approach spans was the Wisconsin Bridge and Iron Company with $143,305. T. A. Loving of Goldsboro, North Carolina submitted the low bid of $34,300 for the draw (Ibid: 3).

Project plans were altered during the spring and on May 4 and the project was again put out for bids. Cubic yards of concrete was down to 978; steel was down to 121,085; machinery was still at 35,000 pounds; linear feet of piles was increased to 30,940; and 103,230 feet board measure of lumber bracing and decking was added (Ibid: 7). The advertisement further noted that,

> A certificate of compliance, on the prescribed form which will be furnished by the Highway Department for that purpose, shall be signed and submitted by all bidders in accordance with executive order No. 6646 issued by the President March 14, 1934. Only bids accompanied by such forms shall be considered. All subcontractors and dealers furnishing equipment and materials and suppliers are also required to submit said forms before contract will be awarded.

In July of 1934, as the convicts were finishing up the hard surfaced road to Kilmarnock, work began on the crossing. The bridge abutment on the Fairfields side was to be located just a few yards west of the ferry landing. Right-of-way for this land was given by William A. Booth who had purchased the land at public auction in November, 1922 following Odis Cockrell's bankruptcy (Northumberland County Deed Book R: 688). The pilings for the fixed spans and pier were driven with a coal or oil fired floating steam crane. The coffers for the center pier were constructed of white oak caulked with either gun cotton or

jude (Bryant 1991: personal communication). The space between the inner and outer coffers, once pumped dry and checked for leaks, was filled with wheat to absorb any water that might leak through the outer coffer. The inner coffer was then filled with cement and covered with wet burlap and left to cure.

Copies of shop drawings indicate that the Virginia Bridge and Iron Company of Roanoke, Virginia fabricated the structural portions of the draw while the James Saunders Company of Dayton, Ohio manufactured the actual motive or operating portions. This division of labor was considered the most economical since the costs of a bridge fabricator--as far as metals, the equipment to work the metal, and trained workers--were always lower than a machinists (Waddell 1921: 319). The bridge was assembled in the field by employees of the Virginia Bridge and Iron Company with the aid of locally hired subcontractors and laborers (Bryant 1991: personal communication).

The bridge is a riveted, single-span, triangular-with-verticals truss center-bearing swing span. The components are standard steel channels, angles, lacing, round bars, and gusset plates. It was considered the cheapest and quickest way to bridge a crossing at that time. The bridge consists of three main elements: 1) the actual bridge or carrying structure, which is fixed in position to allow land traffic to cross and which is then removed by being rotated 90° to permit water traffic through the channel; 2) the means of supporting the bridge or carrying structure along with whatever counterweights are necessary to balance it, and; 3) the means to operate or impart motion to the bridge or carrying structure. The swing span was comprised of twelve panels which totaled 260 feet long, 24 feet wide, and 22 feet high at the portals. The fixed spans on either end of the swing are 475 feet long.

At the time, steel trussed swing-span bridges had been a standard, routine means of crossing navigable bodies of water for over fifty years. By the late-nineteenth century, trusses had become standardized in design and construction, with standard designs being used in a particular class of situations. The truss types that proved themselves reliable were also the ones most frequently constructed, and consequently became the ones most cheaply mass produced and fabricated. The mass production of standardized parts and shapes by a limited number of large steel manufacturers had become so extensive that truss design attained a highly uniform character regardless of which particular bridge company designed and fabricated a bridge. All-iron or steel swing-span bridges were the most common movable spans. At one time they were practically the only type of draw used in the United States (Hovey 1926: 36). Continued improvements in the quality and strength of steel enabled designers to achieve longer spans with a more efficient use of the material while riveting came to be preferred over pin connections for quickness and reliability as riveting equipment for use in the field became available (Diebler 1976: 26). Whole bridges were sized, machined, pre-cut, drilled, riveted and fitted in the fabrication shop, then taken apart, crated up, and shipped to the construction site where they were quickly reassembled. In the early-twentieth century, J. L. Ringwalt stated around this time that, given twenty men, he could assemble a span up to 150 feet in one day. A 200 foot span would take 2 to 3 days, while a 250 foot span would require 3 to 4 days. (Diebler 1975: 49)

This particular design was a standard Virginia Department of Highways favorite; it was used on at least a dozen bridges in the state, including the Downing Bridge on the Rappahannock between Tappahannock and Warsaw. This is the second oldest of ten remaining swing-spans dating from between 1930 and 1957 currently listed in the Virginia Department of Transportation bridge inventory. Six other swing-span bridges of this basic design have been replaced by the Virginia Department of Transportation in the last 30 years. They were on: Route 202 in Westmoreland County over the Nomini Creek, Route 301 in Caroline County over the Rappahannock River (Downing Bridge), Route 10 in Isle of Wight County over Cypress Creek, Route 17 in Suffolk (old Nansemond County) over Bennet's Creek, Route 10 in Prince George's County over the Appomattox River, and Route 360 in Richmond County over Rappahannock River. These bridges consisted of three main elements: 1) the actual bridge of carrying structure which is fixed in position to allow land traffic to cross, and which is then removed to permit water traffic through the channel; 2) the means of supporting the bridge or carrying structure along with whatever counterweights are necessary to balance it and; 3) the means to operate or impart motion to the bridge or carrying structure.

On December 20, 1934, the Rappahannock Record reported that the draw span machinery of the Tipers Bridge was to be tested that day and the way cleared for traffic. The approaches to the bridge had been built up enough to support traffic and were to be gravelled and oiled by the middle of January when the official Bridge Opening Day festivities were scheduled to be held. (Rappahannock Record 1934: 1)

The bridge was opened to the public five days later on Saturday, December 29. The Northern Neck News reported that several hundred people crossed over the bridge on Sunday. The Tipers Bridge was one of the longest built in eastern Virginia that year (Northern Neck News 1-4-1935: 2). The bridge linked together Fairfields and Wicomico Magisterial Districts in Northumberland County and joined a larger area the county with Kilmarnock and Lower Lancaster Counties and became the completing link in a circuit of roads traversing the lower Northern Neck (Ibid: 1). Businessmen in Kilmarnock expected customers from the "other side" of the Wicomico to patronize their businesses more often since the distance travelled would be cut in half by the new crossing (Ibid: 2).

The Official Bridge Opening Day was celebrated in Kilmarnock on Thursday, January 17 and hosted by the mayor and businessmen of the town (Northern Neck News 1-11-1935: 7). The celebration began at 10:30 in the morning when the mayor and a welcoming committee left Kilmarnock and drove over the new road to the Tiper's Ferry Bridge. At the bridge, the Mayor greeted the folks from the other side and gave them tickets and badges entitling them to free admission to various features and events. He and "his guests" were then given a police escort back to town. A portion of the welcoming committee stayed at the bridge through the early afternoon handing out badges and tickets to anyone headed toward the festivities in town.

Once back in Kilmarnock, the Mayor and other town notables gave short welcoming speeches in the Opera House before cutting their guests loose for a day on the town. There were free moving pictures at the local theater and free bowling at a recreation center. Free

Brunswick Stew, hot dogs, and refreshments were available at a used car building from 12:30 to 5:30 p.m. At 5:30, there was boxing at the Opera House. The Northern Neck News pointed out that "the businesses of Kilmarnock have gone to considerable expense to entertain all these people" (Ibid).

The population of Northumberland County steadily decreased after the bridge was built as more people left the area in search of employment in the urban areas. The fishing industry continued to decline and by 1958 when the Norris Bridge was built at the Rappahannock River and Chesapeake Bay, there were still more people moving out of the county than into it. Northumberland County today is essentially a rural area with its economy still based on agriculture and the fishing industry. Wheat, soybean, and corn are the primary crops grown. Fish, crabs and oysters are still pulled from the waters, although not in the quantities of the late-nineteenth and early-twentieth centuries. Development between 1930 and 1970 was minimal in the county. Population decrease as young people left for more urban areas in anticipation of better opportunities. The county today is still sparsely populated and development appears to consist of recreational riverfront activity.

Operation of the Tipers Bridge

The Department of Highways employed six to eight "helpers" to perform routine maintenance on the bridge. They were responsible for: greasing the wedges, cranks, axles, and other moving parts; keeping the engines in running order; lighting and extinguishing the kerosene lamps; keeping the steel cleaned and painted; creosoting the timbers; sweeping dirt or snow off the roadway; carrying wood for the stove in the tender's house; in short--they were responsible for everything but the actual operation of the bridge. Their equipment and supplies were kept in a storage house built on the northern shore of the river. Drums of gasoline and kerosene were kept behind the house. There were over a dozen kerosene lamps on the bridge; six on the fenders, three on the bridge, two on each gate, and two in the bridge tender's house. Each of the lamps was weighted with lead to keep them from being too severely rocked by the wind.

The bridge operator or tender was the man with responsibility of opening and closing the bridge and supervising the helpers. At that time, the locals were still dependent on the water for transportation, and sail vessels greatly outnumbered motor boats (Bryant 1991: personal communication). And because the river was there first, boats were given the right-of-way. The bridge was open twenty-four hours a day, every day of the year. The day was divided into two twelve hour shifts and the crew went through rotating shifts during the month. As traffic on the Great Wicomico fell of and the country climbed out of the depression, the number of helpers on the bridge was decreased and the operator began to take a role in maintaining the bridge (Ibid).

From the tender's house in the upper chords of the truss, he had a clear, unobstructed view of the navigable channel and the ends of the span. Located near the upper chords and struts with only the floorboards and siding of the house to keep out the wind, the bridge tender's house was a cold place in the winter. The room had large windows on each of its four sides, no insulation, and only one wood stove to heat the space with. The

control apparatus for the bridge was located inside, on the floor near the east wall of the house. The controls consisted of a row of five, three foot long, ratcheted levers mounted on a steel pipe attached to the floor.

Looking out the east window, the five ratcheted levers controlled, from left to right: 1) the EMERGENCY BRAKE, 2) the BRIDGE - WEDGE SELECTOR, 3) the TRANSMISSION, 4) the CLUTCH, and 5) the SERVICE BRAKE. There was a sixth metal rod fitted with a handle which exited the house just below the window. This rod was the CHOKE for the engines below. To the right of it was a rotating pointer known as the WEDGE INDICATOR. This indicator let let the operator know whether or not the wedges were seated. Each control lever were connected to a light metal rod which exited through the south wall of the house where it linked up with a series of rods, offsets, and bell cranks which connected each of the control levers to its respective operating parts.

To rotate the bridge it was first necessary to start one of the two four-cylinder International Farm-All or Hercules Industrial gasoline engines located on steel framing hanging from the floor beams of the bridge above the pivot pier (Ibid). One engine was needed to move the bridge; the other was served as a back up. The engine was started from the operator's house with a starter switch connected to a six volt battery. The choke linkage ran through the wall of the operator's house to a small bell crank located on a piece of angle iron on the outside of the truss. The other arm of the bell crank was linked to a vertical series of rods which ran down the outside of the truss to another bell crank below the deck. The second arm of this lower bell crank was linked a horizontal rod which ran under the deck to the carburetors on the two engines. The rods from the operator's house to the engines were supported by small metal brackets.

If neither of the engines would start, the wedges could be unseated manually via a capstan geared to the the shaft which turned the wedge cranks. The bridge could then be opened manually via another capstan geared to the bull wheel. Both capstans were accessed through trap doors in the deck. A **Y** shaped handle was fitted onto the top of either of the capstans and two eight foot long steel pipes inserted in each arm of the **Y**. Two men could unseat the wedges, and four men could, with no small amount of effort, rotate the bridge.

Normally the engines did start and the next step was to make sure the clutch was disengaged and put the transmission in reverse. The transmission box was bolted between the two gasoline engines and was driven by either of the engines via straight clutches. The transmission had two gears--forward and reverse (or close and open for the bridge, and seat and unseat for the wedges). The clutch lever was linked to the transmission box via a series of rods and cranks similar to those already described. The engine was allowed to warm up while the operator checked to see the roadway was clear, sounded the warning bell and lowered the gates.

As originally designed and built, the gates were lowered and raised by the bridge tender using two ratcheted levers located in the house. Each of the two levers was linked to its respective gate via a system of shafts, rods, and bell cranks. The two gate levers--one for each end of the bridge--were keyed to two parallel shafts which ran through the wall of

the house to two brackets on the truss. Just beyond the brackets, on the outside of the truss, a plain crank was keyed on the end of each shaft. (At this point, the two gate operating linkages become mirror images of one another, and only the east gate linkage will be described.)

On the end of the crank was linked an operating rod assembly that extended down the outside of the truss to just above the deck. The operating rod assembly was composed of two rods separated roughly one-third of the way down by clevises linked to a hinged bracket mounted on a truss member. This hinged bracket kept the rod from flexing out of line when the rod was forced downward. Just above the timber deck, the operating rod assembly was linked to a right angle bell crank. Another operating rod was linked to the other end of the bell crank, and ran, on the outside of the truss, to the end of the span. The lower operating rod assembly was composed of rods separated at ten foot intervals by clevises linked to hinged brackets bolted to projecting supports welded to the truss. Because the gates were on the fixed span, knuckles were used to link the operating rod on the movable span to the operating rod on the fixed span.

At the end of the operating rod on the movable span was a male knuckle which overlapped a female knuckle on the fixed span. The operating rod between the female knuckle and the gate was supported by roller assemblies attached to the span about every 8 feet. The end of the operating rod was linked to an asymmetrical bell crank directly under the gate. The long arm was linked and a rod with a sharp angle bend in the middle of it which was in turn linked to the the bottom of the gate. The bell crank under the gate on the east side of the bridge was keyed onto a shaft which ran through the stringers under the deck and operated the gate on the west side of the roadway.

When the bridge tender pulled the lever to his right and ran the spring clip down over the ratcheting, the shaft the lever was keyed to, and the crank at the opposite end, rolled to the right with it. The crank arm pushed down on the operating rod assembly running the outside of the truss, which forced the bell crank to swivel downward. As the upper arm of the bell crank was forced downward, the lower arm was pushed away from the center of the span. This movement, in turn, pushed the operating rod running along the movable span away from the center. As the rod was pushed, the brackets swivelled on their hinges in the direction of the end of the span. The male knuckle at the end of the operating rod on the movable span pushed the female knuckle of the rod on the fixed span. The operating rod on the fixed span rolled through the metal rollers and pushed the lower arm of the bell crank under the gate. This movement rolled the shaft under the decking the crank was keyed to, operating the crank and gate on the other side of the roadway. The bell crank pushed the short rod linked to the short arm of the last bell crank. The long arm was forced upward, pushing the rod with the sharp bend up and to the side. This forced the bottom, or end, of the gate up.

After the gates were down and traffic was stopped, the wedges, which held the bridge in place and transferred the live traffic loads to the piers, had to be withdrawn from their seats. All the wedges were moved at one time by a series of shafts, cranks, and connecting rods powered by either of the two engines.

The operator checked to see that BRIDGE - WEDGE SELECTOR was in the WEDGE position. The BRIDGE - WEDGE SELECTOR lever was linked to the main drive shaft via rods, cranks, and an offset. The main drive shaft runs under the centerline of the bridge and is geared to the output drive on the transmission box via a large gear keyed to the main drive shaft and a smaller gear keyed to the end of the output shaft. This gear mesh is the drive's first speed reduction. Both ends of the main drive shaft are equipped with slip dog clutches, and the shaft, by being slid back and forth via its connections with the BRIDGE - WEDGE SELECTOR lever, engages either the wedge or bridge drives.

To engage the wedge drive, the main drive shaft is slid a few inches towards the southern end of the span where the slip dog clutch on the end of the main drive shaft engages a slip dog clutch on the end of the wedge drive shaft. The wedge drive shaft is inserted through the bottom of a gear box hanging from the floor beams of the truss. The wedge drive shaft continues on through the opposite end of the gear box and ends in a bevelled gear. This bevelled gear interfaces another bevelled gear which is keyed to the wedge capstan which drops down from just below a trap door in the deck. The wedge drive shaft is broken by a coupling before it enters the gear box. This break facilitates repairs to that section of the drive.

This gear box transfers the wedge drive input to two output cranks on either side of the gear box. It also acts as another speed reducer. The output cranks and the wedges they drive are mirror images of one another, and only the right output crank will be described. The output crank is linked to one end of a rod, the other end of which is linked to a crank arm mounted on the end of one of the main wedge crank shafts located above the wedge drive shaft coupling. The main wedge crank shafts are supported by the floor beams and lower chords and extend to the outside of the truss where the main wedge cranks are keyed onto their ends.

Each arm of the main wedge crank is linked to wedge cranks located at the ends of the span by connecting rods. These four connecting rods are supported by rollers mounted on the truss uprights and their tension can be adjusted by turnbuckles located at a break along each of their lengths. Each wedge crank is keyed on the outer end of a shaft mounted on the lower chords of the truss. Wedge bell cranks are located on the inner sides of the chords next to the wedge cranks. Each of these bell cranks are linked to their respective wedges by a wedge driver rod. Each of the wedges are pushed and pulled in and out of their seats which are mounted on concrete bents.

In the middle of the each of the wedge drive shafts mounted at either end of the bridge is a crank and rod which pulls a latch out of a pocket when the wedges are unseated. This latch is equipped with a small wheel and rolls along a narrow ledge on the concrete bent. When closing the latch rolls up the side of the outside of the pocket and then drops into the pocket. The latch and pocket keep the swing in line with the roadway.

The operator, using the WEDGE - BRIDGE SELECTOR lever, would have slid the main drive shaft toward the wedge drive shaft and engaged the clutch. The main drive shaft slip dog clutch would have turned with the main drive shaft and dropped into the wedge drive

slip dog clutch. The wedge drive turned the gearing inside the gear box which, in turn, rolled the output cranks on the side of the gearbox downward. This pushed the cranks on the wedge crank shaft which rolled that shaft and the main wedge cranks on either side of the truss. The main wedge cranks pushed and pulled the connecting rods which in turn rolled the cranks at each end of the bridge. These cranks rolled the shafts they were keyed to forcing the cranks on the inner sides of the truss to roll upward. The cranks pulled the rods connected to the wedge driver bell cranks. These rods pulled the first arms of the bell cranks up, which forceed the second arms of the wedge cranks down and away from the wedge seats. This movement pulled the wedges, via the wedge rod drivers, out of their seats. The operator would have then checked the WEDGE INDICATOR to see that the main wedge crank had rolled and the wedges were free of their seats. The bridge was then free to move.

The operator would have then disengaged the clutch and moved the WEDGE - BRIDGE SELECTOR lever to BRIDGE. This slid the main drive shaft the away from wedge drive and towards the bridge drive. The main drive shaft went through the center girder of the bridge to the bridge drive on the other side of the pier. The bridge drive hung from and was supported by the floor beams of the swing-span.

The bridge drive shaft had a slip dog clutch on one end and a small vertical bevel gear on the other. This bevel gear meshed with a large horizontal bevel gear keyed on a vertical shaft supported by brackets attached to the floor beams. The size difference of these gears served as a gear reduction and speed reducer. The vertical shaft extended upwards and was capped with a horizontal gear that meshed with a small horizontal gear keyed onto the bridge capstan just below a trap door in the deck. Immediately below the large bevel gear on the vertical shaft, and on the same line as the bridge drive shaft but separate from it, another horizontal gear was placed. This gear meshed with an appreciably larger gear keyed to the top of the "bull wheel" drive shaft. The difference is gear sizes acted as yet another speed reducer. At the bottom of the bull wheel drive shaft was the bull wheel. This bull wheel meshed with a toothed rack which ran around the center pivot. This track was 16' 8" in circumference and comprised of ten curved sections bolted to the concrete deck. Around this rack was a 19' 4" metal track. Four wheel carriages dropped from I-beams attached perpendicularly to the lower chords of the swing rolled around this track and balance the span as it moved. Almost the entire weight of the span was taken by the center pivot. The pivot consisted of a 15 1/2" phosphor bronze upper disc resting on a 16" hardened forged steel lower disc within a cast steel casing filled with oil. The movement of the bridge was stopped by means of a drum brake mounted on the main drive shaft.

To close the bridge, the above operations were reversed: the bells were sounded; the engine was put in reverse and the bridge closed; the WEDGE/BRIDGE SELECTOR was shifted to WEDGE and the wedges seated; the gates were raised and the engine turned off.

Changes to the Tipers Bridge

A three phase electric motor and slip clutch replaced one of the Hercules engines in the early 1950s when "the rural coop finally got enough juice running down [there]" (Bryant 1991: personal communication). An electrical panel was designed and built inside the tenders house. A large drum switch is mounted on the side of the console. A maintenance walkway below the bridge, electric safety gates and platforms, an electric horn, and warning lights were also installed at that time. Neon lights at either end of the bridge warn drivers, "STOP AHEAD SPAN OPEN." The powerlines for the bridge run underwater from the south shore of the river to the pier. The two cables are encased in firehose to keep them from being chafed by the pier.

An instruction sheet is mounted on the wall of the tender's house and gives the following instructions for opening and closing the bridge:

1. Turn on traffic light switch.
2. Turn on indicator switch.
3. Turn on warning switch. Watch to see that traffic has stopped and is beyond gates before lowering gates.
4. Lower outside traffic gates.
5. Lower inside traffic gates.
6. Withdraw wedges by turning drum switch clockwise. Use #1 speed setting. Check wedge indicator dial for out position. Return drum switch to off position.
7. Shift lever marked #7 to straight up position to open span.
8. Open span by turning drum switch clockwise. Use #1 speed setting. Return drum switch to off position.
9. Sound siren 5 times before closing bridge. Close span by turning drum switch counterclockwise. Use #1 speed setting. When span is nearly closed, reset drum switch to off position. Push red stop button, turn drum switch briefly to #1 speed setting, then bump (interrnittently use) switch on and off until span is fully closed (center latches at each end of bridge will drop in). Return drum switch to off position.
10. Shift lever marked #7 to back position to drive wedges.
11. Drive wedges by turning drum switch counterclockwise. Use #1 speed setting. Check wedge indicator dial for in position. Return drum switch to off position.
12. Raise inside traffic gates.
13. Raise outside traffic gates.
14. Turn off switches #3, #2, and #1.

Although it only requires five minutes to actually open and close the draw, traffic is interrupted for a total of ten minutes from the sounding of the warning horn signalling the closing of the safety gates to reopening of the roadway.

Other than changes to the operating system of the bridge, changes over the years have been relatively minor. The bridge tender's house was rebuilt in the 1960s because of badly deteriorated framing members. The fender pilings are original but the fender bumpers and walkways have been replaced approximately every twenty years, the last time being in

the mid-1980s. The portals were repaired in 1973. In 1974, the timber pilings were wrapped with plastic to prevent any further infestation of marine worms.

The bridge currently weighs over fifty tons and is classified by the Virginia Department of Transportation as a piece of equipment with a road running across it. The bridge is left unmanned and closed to water traffic between the hours of 9 PM and 5 AM. Any changes in operating hours must be cleared by the United States Coast Guard.

The bridge is well maintained. The steel is continuously being scraped and repainted as needed. The wedges are greased every Wednesday and all other moving parts of the bridge; gears, , cranks, axles, etc., are greased once a month. A heavy oak beam is located between two of the chords above the motors. This beam is routinely inspected for cracks which would indicate that the structural components of the bridge are undergoing lateral stress.

The Virginia Bridge and Iron Company of Roanoke, Virginia*

The Shenandoah River Bridge was manufactured by the Virginia Bridge and Iron Company of Roanoke, Virginia. This company, known in the Roanoke area as "the Bridge Works," was the largest fabricator of steel structures south of Pittsburgh and played a major role in Roanoke's economic development. It was one of three bridge companies located in Roanoke in the first quarter of the twentieth century. One of the two others, the Atlantic Bridge Company, is reported to have been strictly a truss erector, not at all involved in designing or fabrication. The other, Roanoke Bridge Company, built a number of truss bridges in Virginia's western counties.

The Virginia Bridge and Iron Company was incorporated in 1895 in the City of Roanoke, Virginia. This company was the result of the financial reorganization of the American Bridge Company which had been established only six years before. The American Bridge Company may have had ties to the New Jersey Bridge and Iron Company, founded in 1861, which in turn was linked to the Delaware Manufacturing Company of 1837. In 1895, when the Virginia Bridge and Iron Company was incorporated, the plant consisted of a small foundry which employed between 50 to 70 men and retained a value of $50,000.

The economic base of the City of Roanoke had been primarily built on capital transplanted from the northern industrial region. However, the Virginia Bridge and Iron Company boasted of being a local company founded on independent, local capital. Six of the officers involved in the reorganization and incorporation of the company: Tipton T. Fishburne, Rueben H. Fishburne, J. B. Fishburne, W. E. Robertson, W. B. Bevil, and E. L. Stone, were from western Virginia. Most of the officers were involved in many local businesses. As an example, the Fishburne brothers began in tobacco and expanded their interests into industry and banking. Tipton Fishburne was vice-president of the Virginia Bridge and Iron Company, vice-president of the Stone Printing Company, and president of both the Twin Mill Corporation and the Roanoke Hospital Association. The seventh officer, Charles Edwin Michael, moved from Maryland in 1889 when the American Bridge Company was begun. In 1892 he became that company's secretary treasurer, a position he

retained throughout the reorganization of the company in 1895. He was later elected and remained vice-president and general manager until 1904, when he became president of the Virginia Bridge and Iron Company, a position he held until the depression.

Initially the company constructed light highway bridges and steel structures but soon expanded and diversified. By 1904, the Virginia Bridge and Iron Company's plant occupied 10 1/2 acres and contained bridge, girder, and machine shops, as well as a new office building. The company had acquired late model equipment, which included air compressors for pneumatic hand riveters, cranes and lifts, and lathes, punching, riveting, sawing, and milling machines powered by 100 horse power engines. At this time, the company employed 175 men in the shop, and 150 in the field to perform erections. The annual output was approximately 12,000 tons of steel. Aside from bridges, the Virginia Bridge and Iron Company was engaged to assemble turntables, factories, warehouses, and other steel structures throughout the southeast. Notable projects included the Norfolk and Western Railway shops at Portland, Ohio, and rolling mills for the Knoxville Iron Company.

By 1907, the Virginia Bridge and Iron Company controlled capital of $550,000 and was considered a success story by the Roanoke Chamber of Commerce. The company increased the size of its plant with the addition a girder shop equipped with heavy cranes and some new fire-proof shops. The work force grew from 300 to 450 employees with night shifts becoming common. Branches were established in Atlanta, Georgia and Little Rock, Arkansas, and a shop was opened in Burlington, North Carolina which employed 175 people. One year later, the Virginia Bridge and Iron Company constructed a major plant in Memphis, Tennessee.

The company's central office continued to be located at the Roanoke plant. In 1910, 100 people were employed in the central office as executives, engineers, draftsmen, and stenographers, while 600 men worked in the shops producing 45,000 to 100,000 tons of steel products each year. Heavy railroad bridges became the primary product and were sold to major railroad lines throughout the American south and southwest, and Mexico. Steel railroad cars were also produced in quantity, 3,000 in the year 1910 alone. The company continued to grow throughout the decade. Although it concentrated on the southeast, it succeeded in establishing itself as a producer throughout the country. With the coming of World War I, the Virginia Bridge and Iron Company fabricated steel for mercantile shipping. In 1922 a new plant was built in Birmingham, Alabama. An undated advertising pamphlet published by the company sometime in the 1920s listed among the company's projects: a truss bridge for the Norfolk and Western Railroad across the Shenandoah River at Riverton Junction comprised of four 150 foot long spans with plate girder approaches; a 150 foot, 240 ton, truss bridge with a 45 foot skew for Norfolk and Western Railroad near Roanoke, Virginia; the Jefferson Savings Bank Building in Birmingham, Alabama and The Cotton Exchange Building in Memphis, Tennessee, each of which required over 3,000 tons of steel; a 160 foot span lift bridge for the Missouri Pacific Railway over the L'Aungville River at Marianna, Arkansas based on a Waddell and Harrington patent; a lift bridge for the Florida East Coast Railway at Fort

Lauderdale, Florida based on a Straus Bascule Bridge Company patent; a 275 foot span Camelback truss for the San Antonio and Arkansas Pass Railway over the Colorado River at Yoakum, Texas; the Virginian Railway Falling Creek Viaduct near Roanoke; a 200,000 gallon water tower for the Norfolk and Western Railway, and a coal pier at Lambert Point, Norfolk, Virginia for the Norfolk and Western Railway. This coal pier was the largest coal pier constructed up to that time in the United States. It was 1,400 feet long, 90 feet high and required 8,000 tons of steel. It had a capacity of 4,000 tons an hour. By 1934, the Virginia Bridge and Iron Company was the third largest steel fabricating company in the United States with plants in New York, New Orleans, El Paso, and Dallas.. It was awarded a Federal Government contract to fabricate four drums for the Panama Canal.

World War II was a time of increased heavy production loads for the firm. The bridge works produced the buildings, cranes and dry docks for the United States Navy when it upgraded its facilities at Norfolk. Other major projects included a new bakery structure for the National Biscuit Company, and the Sugarbowl and Orangebowl Stadiums. In 1942, the company produced $10,000,000 worth of product and maintained 1,800 people on the payroll.

In 1951, for reasons not found in researching this company, the Virginia Bridge and Iron Company merged with U. S. Steel and became part of the American Bridge Company division. In the following years, probably due to ongoing changes in technology, markets, and competition within the industry, all of the production facilities started up under the Virginia Bridge and Iron Company shut down. The last closed in the 1960s during a period of labor unrest.

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* This discussion of the history of the Virginia Bridge and Iron Company is taken from *Rockingham County Bridge Number 98 / State Route 1761 Bridge / Pittsylvania County Bridge Number 6906 / State Route 880 Bridge / Berry Hill Bridge / State Line Bridge; Historic American Engineering Record Number NC-38* prepared by Craig Lukezic.

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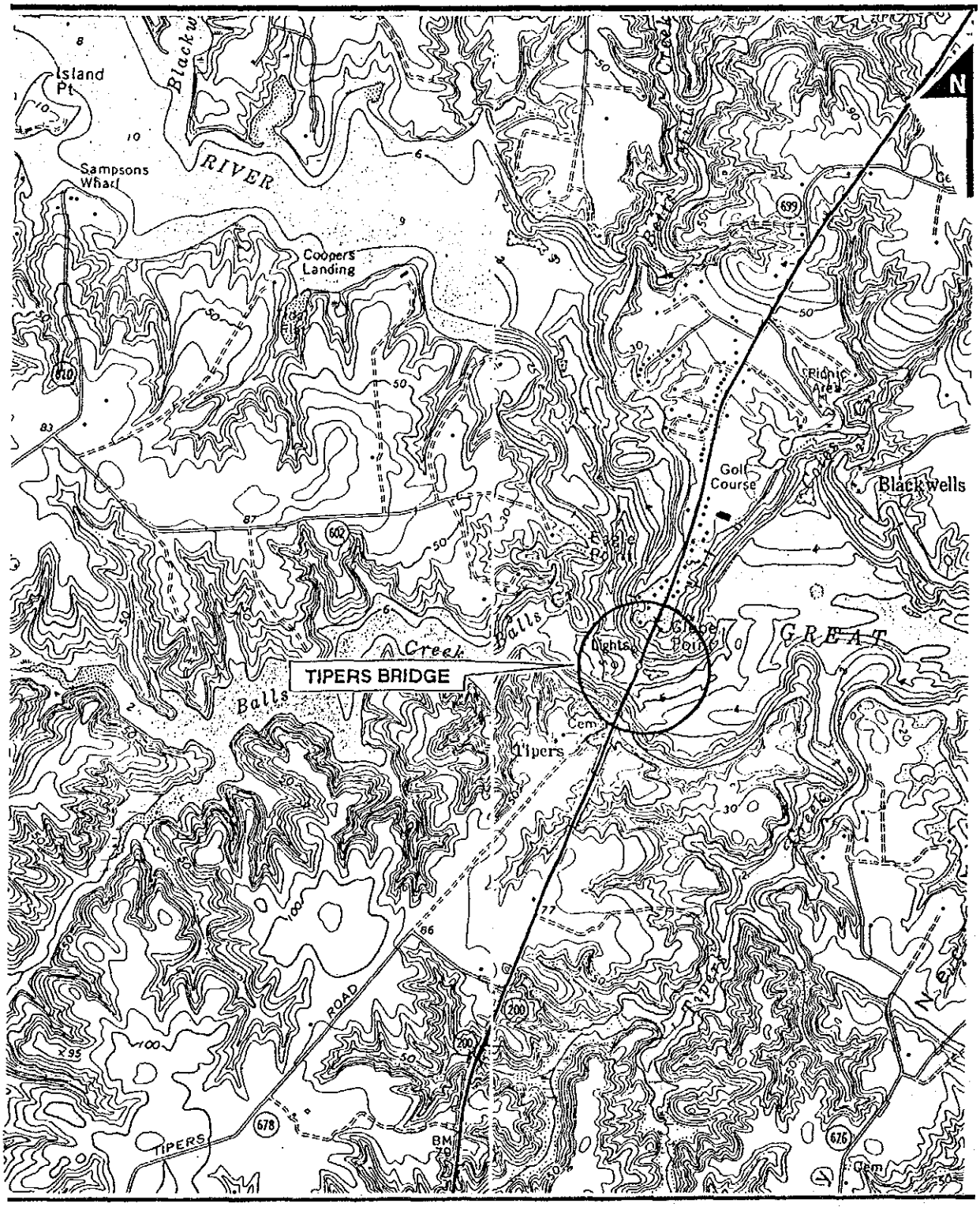

▶Location of Tipers Bridge
Source: USGS Reedsville, VA 7.5' Quad 1968

0 1000' 2000' 3000' 4000' 5000'